Science

Commonly Used Scientific Tools and Models

This document is a supplement to the Assessment Guide for Educators (AGE). Educators may use this document as a resource for classroom instruction, and students may use it for reinforcement of lessons and as a study guide in preparation for the GED Science test.

The examples provided are associated with the GED Science indicators and content topics from the domains of life science, physical science, and Earth and space science. These examples are separated into two sections: (1) Tools and (2) Models.

1. TOOLS

Balance (triple beam)
An instrument that measures the mass (grams; milligrams) of an object

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Stopwatch
An instrument that measures a time interval (usually minutes and seconds)

Aleksandr Bryliaev/Shutterstock

Electronic Balance
An instrument that measures the mass (grams; milligrams) of an object
Its measurement is more precise than a triple beam balance.

litchima/Shutterstock

Test Tube with stopper
A container used to hold, heat, or mix small amounts of substances

Rawan Hussein/123RF

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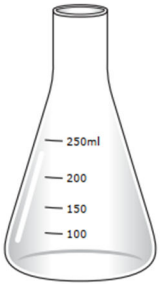
Beaker

A container that holds liquid samples
It can be used for mixing, heating, and stirring substances as well as for measuring approximate volumes (liters; milliliters) of solutions.

Idea tank/Shutterstock

Erlenmeyer Flask

A container that holds and temporarily stores liquid samples
It can be used for heating or stirring substances as well as for measuring approximate volumes (liters; milliliters) of solutions.



Pipette/Dropper

An instrument used to transfer small amounts (milliliters; microliters) of liquid from one container to another

Paket/Shutterstock

Graduated Cylinder

An instrument that measures the volume (liters; milliliters) of a substance
Its measurement is more precise than a flask or beaker.

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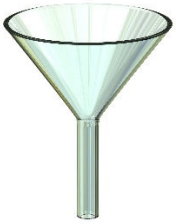
Funnel

An instrument used to transfer liquid or powdered substances into a container with a small opening; can also be used for filtering



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Petri Dish
A container that holds a growth medium used to culture different microorganisms and cells
Can also be used to temporarily hold substances

Metric Ruler/meter stick
An instrument that measures length (meter; centimeter; millimeter)

Feng Yu/Shutterstock

Microscope (compound)
A microscope that uses light for the magnification of samples that are placed on a glass slide; can magnify 4 to 2,000 times the size of a sample

Joey Chan/Pearson Education Asia Ltd

Bunsen Burner
A gas burner that produces a single continuous flame that can be used as a source for heating, sterilization, and combustion

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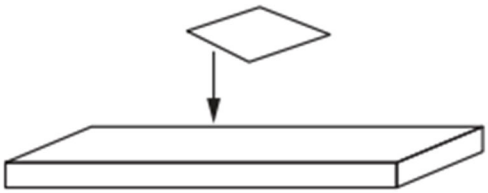
Microscope Slide (with coverslip)
A thin flat piece of glass that holds specimens for examination under a microscope



Thermometer
An instrument that measures temperature (°Fahrenheit; °Celsius)

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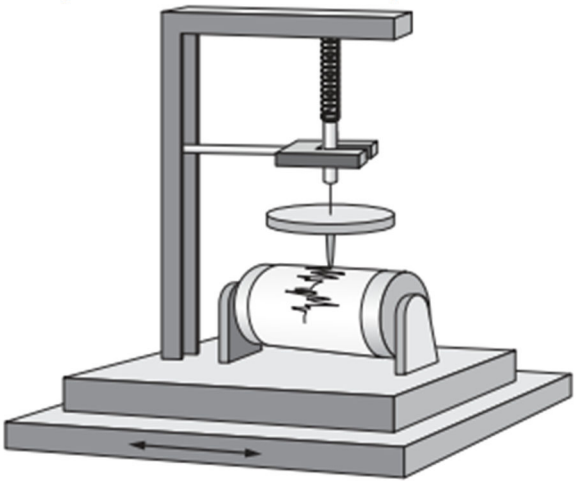
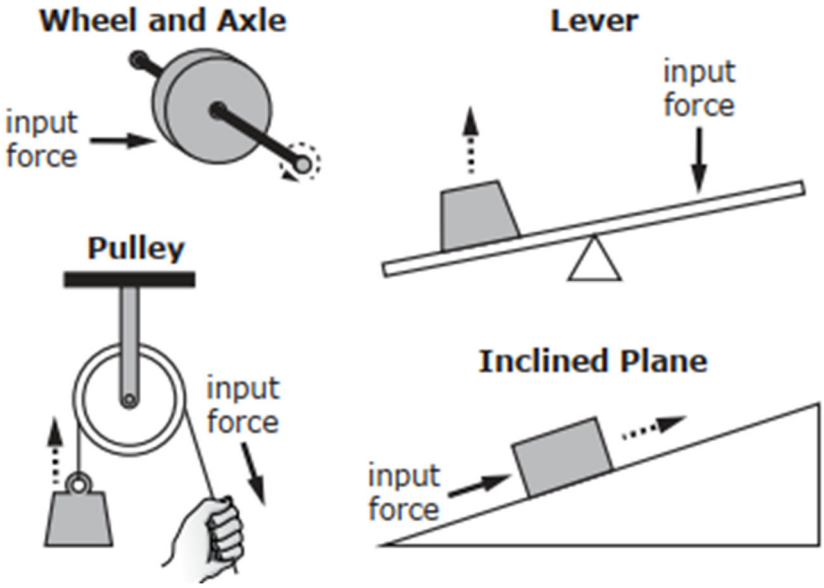
Seismograph
An apparatus that detects earthquakes and measures different aspects of an event by recording the movement of the ground



Spring Scale
An apparatus with a spring and a hook that measures the weight (grams) or force (newtons) of an object that is attached to the hook

Tsz-shan Kwok/Pearson Education Asia Ltd

Simple Machines
A device that reduces the amount of force (newtons) required to move objects



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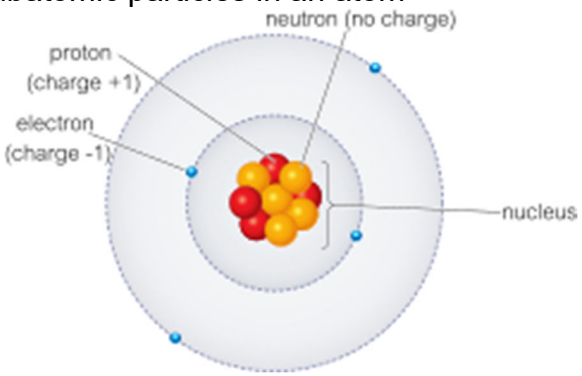
2. MODELS

Bohr Model of an Atom

A diagram that shows the arrangement of subatomic particles in an atom



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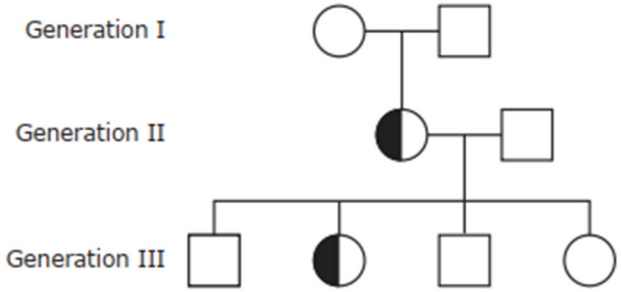
Pedigree Chart

A diagram that shows an inherited trait in a family over several generations



Punnett Square

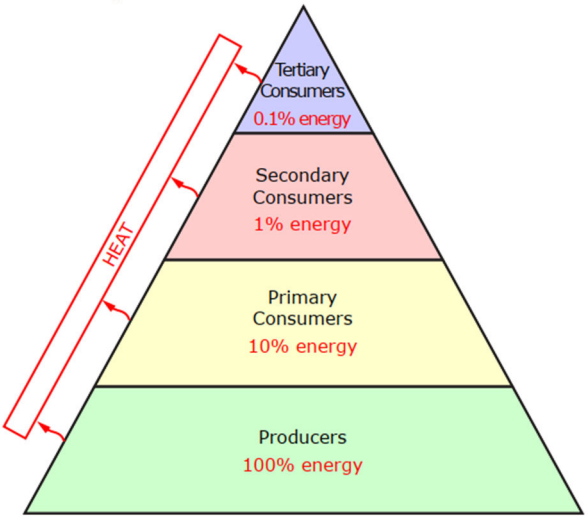
A diagram that shows the possible combination of alleles in offspring based on parental alleles

Capital letters represent dominant alleles and lowercase letters represent recessive alleles.

	B	B
b	Bb	Bb
b	Bb	Bb

Energy Pyramid

A graphical representation that shows the energy found at each trophic level in an ecosystem



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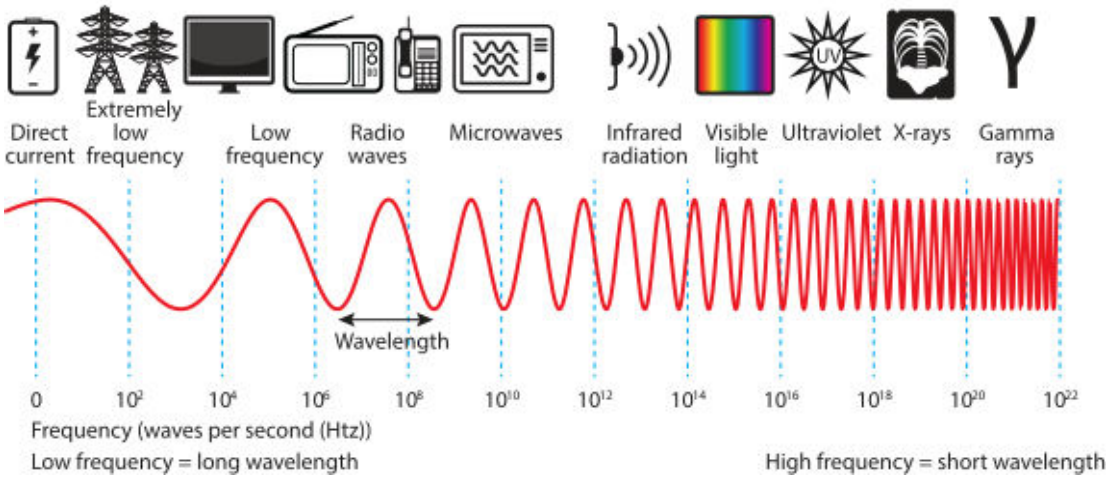
Wave Properties

Characteristics that identify or describe waves



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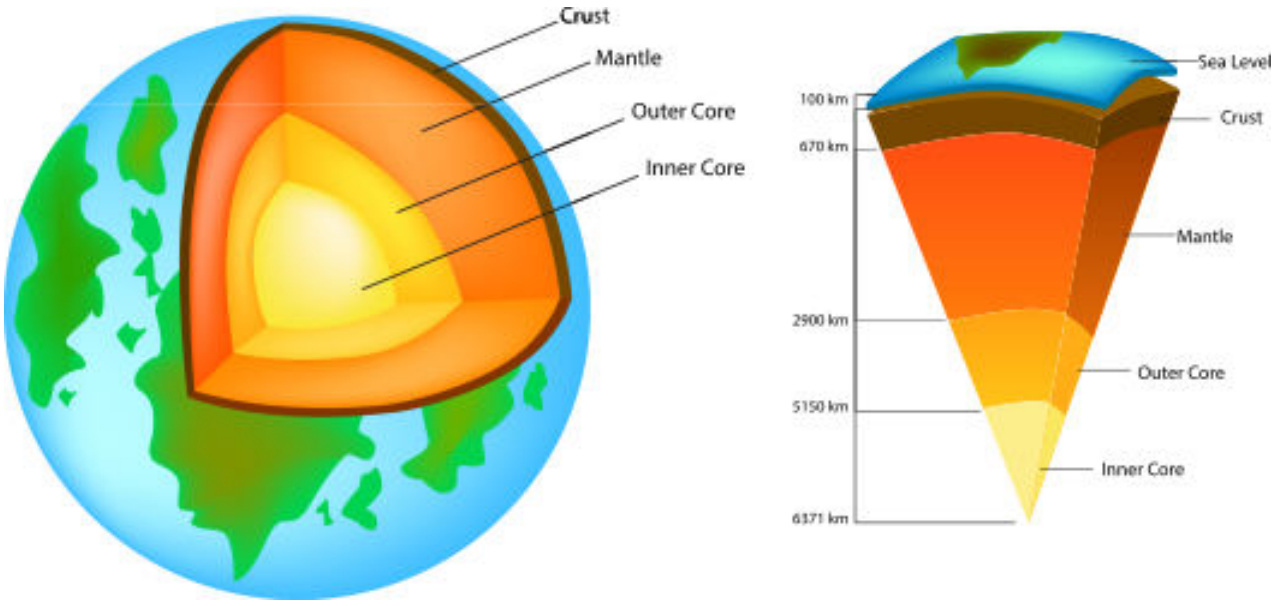
Earth's Layers

A diagram that shows the different layers of Earth



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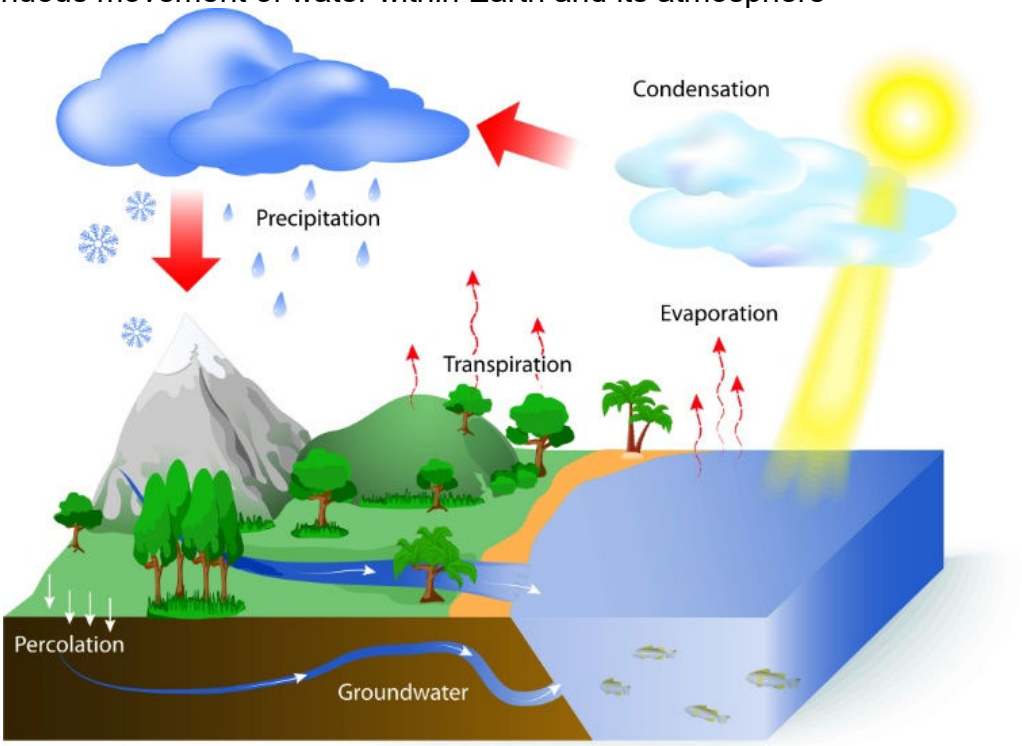
Water Cycle

The continuous movement of water within Earth and its atmosphere



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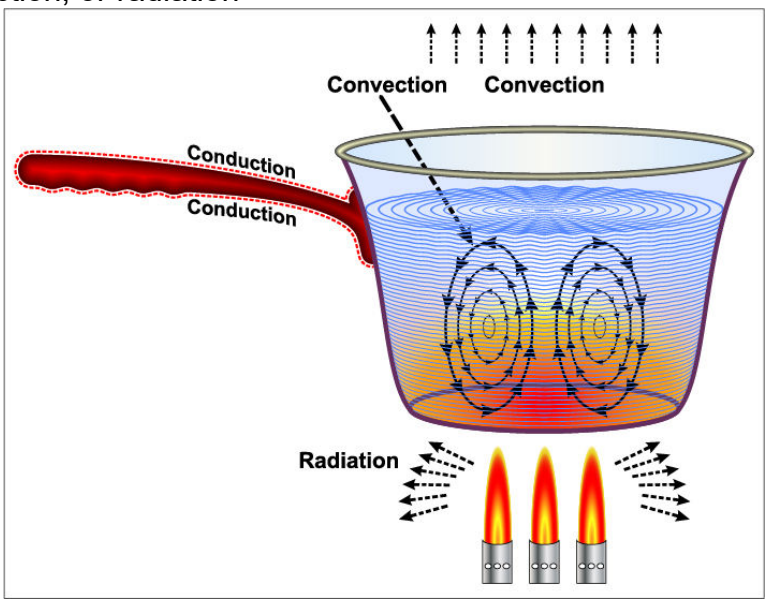
Heat Transfer (convection, conduction, radiation)

The process by which heat (thermal energy) flows from one place to another through convection, conduction, or radiation



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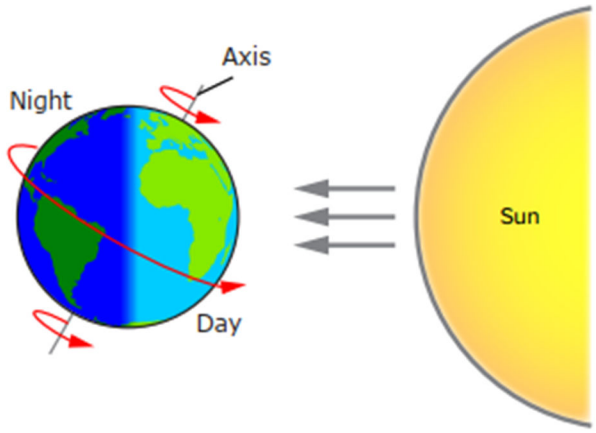
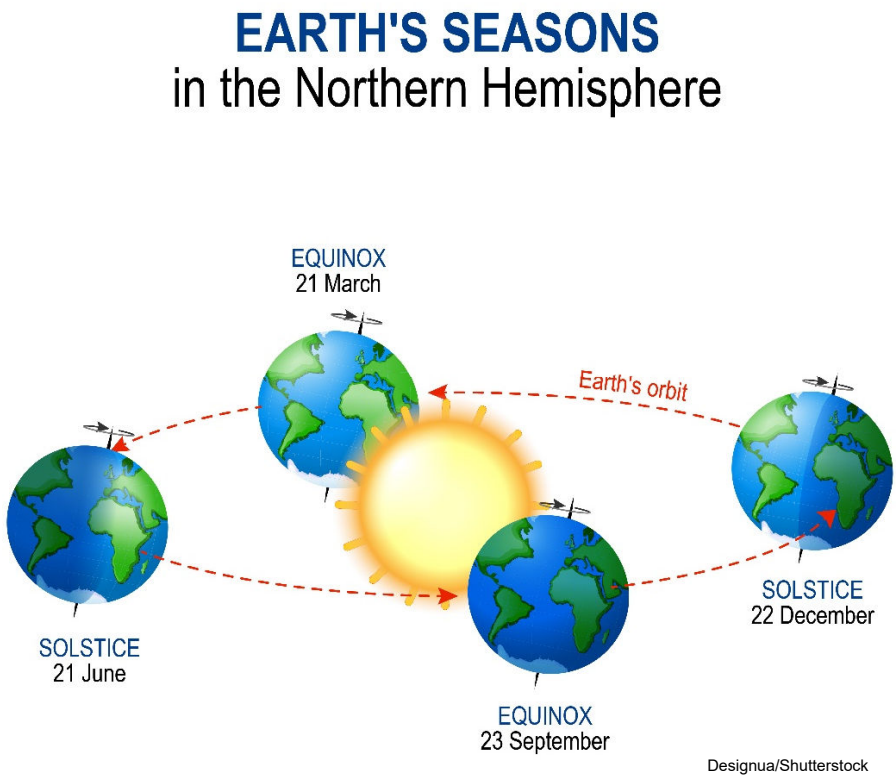
Earth's Rotation
The amount of time (approximately 24 hours; 1 day) it takes Earth to complete one rotation on its axis



Earth's Revolution and Seasons
Revolution: The amount of time (approximately 365 days; 1 year) it takes Earth to travel around the Sun.
Season: The changes that take place due to Earth's tilt on its axis and the position on its orbital path.



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Carbon Cycle
The continuous movement of carbon through Earth and its atmosphere

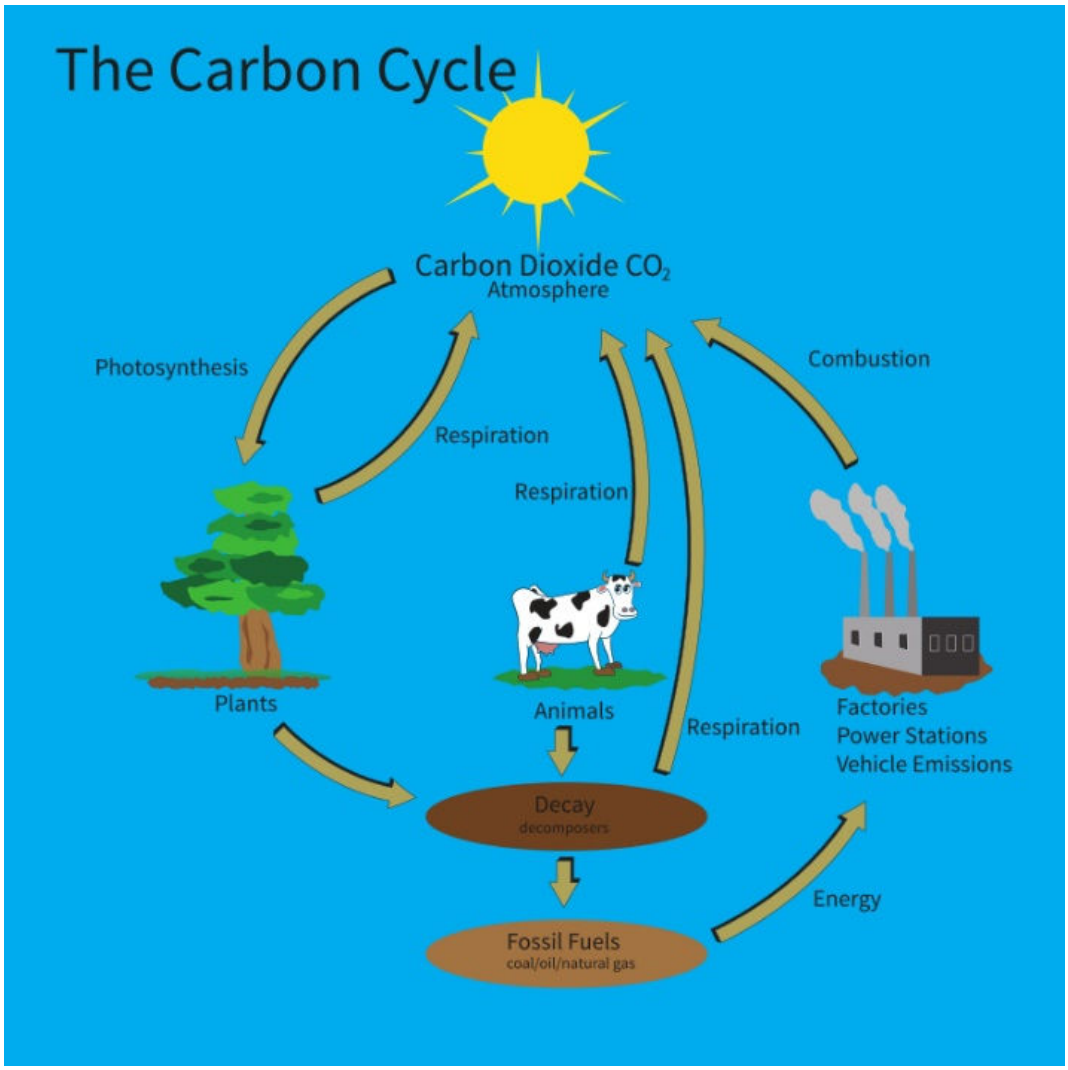

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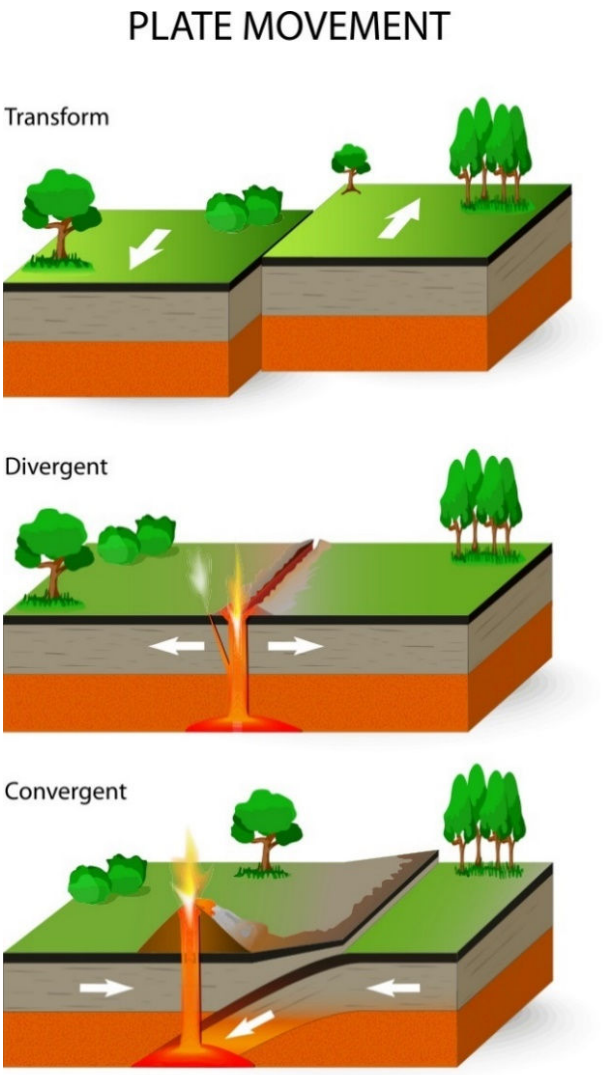
Plate Tectonics Theory
A theory that explains how Earth's geological features (mountains, ridges, trenches, fault lines) form as a result of the movement of plates that are part of the lithosphere



Newton's Laws of Motion
Laws that explain the relationship between the motion of an object and the forces acting upon it
FIRST LAW: An object at rest will remain at rest unless it is acted upon by an unbalanced force. An object in motion will remain in motion at constant speed and direction unless acted upon by an unbalanced force.
SECOND LAW: The acceleration of an object depends on the mass of the object and the amount of force applied to it.
THIRD LAW: For every action force, there is an equal and opposite reaction force.

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